

Appl. No. : 09/776,260  
Filed : January 26, 2001

IN THE CLAIMS:

1. (Withdrawn) A method of forming a rugged metal structure comprising the steps of:

forming a rugged structure comprised of substantially silicon atoms; and  
replacing silicon atoms in the rugged structure with metal atoms.

2. (Withdrawn) The method of Claim 1, wherein the step of forming a rugged structure comprises:

depositing an amorphous or polycrystalline silicon structure by chemical vapor deposition; and

annealing the silicon structure to form a silicon surface having a rugged surface morphology.

3. (Withdrawn) The method of Claim 1, wherein the step of replacing silicon atoms with metal atoms comprises exposing the rugged structure to a refractory metal-halide complex.

4. (Withdrawn) The method of Claim 3, wherein the refractory metal-halide complex comprises WF<sub>6</sub>.

5. (Withdrawn) The method of Claim 4, further comprising the step of chemically oxidizing the rugged structure prior to exposing the rugged structure to the refractory metal-halide complex.

6. (Previously Amended) A process for fabricating a metal-insulator-metal capacitor on a semiconductor wafer comprising the steps of:

forming a silicon electrode structure on the semiconductor wafer;  
making the silicon electrode structure and  
replacing the silicon in the silicon electrode structure with a metal, thereby forming a rugged metal electrode.

7. (Previously Amended) The process of Claim 6, further comprising covering the rugged metal electrode with a dielectric layer having a high dielectric constant.

8. (Original) The process of Claim 7, further comprising covering the dielectric layer with a metal layer.

Appl. No. : 09/770,40  
Filed : January 26, 2001

9. (Previously Amended) The process of Claim 6, wherein the step of replacing the silicon in the silicon electrode structure comprises forming a boundary layer on the silicon electrode structure, exposing the silicon electrode structure to a refractory metal-halide complex, and removing the boundary layer.

10. (Previously Amended) The process of Claim 9, wherein the boundary layer comprises a dielectric and the refractory metal-halide complex comprises WF<sub>6</sub>.

11. (Original) The process of Claim 7, wherein the dielectric layer comprises a material selected from the group consisting of Ta<sub>2</sub>O<sub>5</sub>, BaTiO<sub>3</sub>, SrTiO<sub>3</sub>, Ba<sub>x</sub>Sr<sub>1-x</sub>TiO<sub>3</sub>, and PbZr<sub>x</sub>Ti<sub>1-x</sub>O<sub>3</sub>.

12. (Original) The process of Claim 8, wherein the metal layer comprises titanium.

Claims 13-24 cancelled.